



Wiley Rein & Fielding LLP

1776 K STREET NW
WASHINGTON, DC 20006

PHONE 202.719.7000
FAX 202.719.7049

A PROPOSED REGULATION TO IMPLEMENT THE POLICY RECOMMENDATION OF CORNING INCORPORATED AND SUPPORTING LEGAL ANALYSIS

I. Proposal

As presented in its comments in the *UNE Triennial Review*,¹ Corning Incorporated (“Corning”) proposes the following policy measures with respect to the deployment of fiber to the home (“FTTH”) by ILECs:

- relieve FTTH facilities from the unbundling requirement under Section 251(c)(3);
- relieve ILECs of any obligation to deploy copper facilities in new build situations where FTTH is deployed;
- give ILECs the option of retiring or selling the existing copper plant in rebuild or overbuild situations where FTTH is deployed; and
- preempt the states from altering any unbundling relief on FTTH granted by the Commission.

Importantly, Corning also advocates a prompt transition away from the UNE Platform so that ILECs will have sufficient revenues to begin reversing the sharp cuts in investment that they have been forced to undertake. The Commission also should take care not to slash other sources

¹ *Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, Deployment of Wireline Service Offering Advanced Telecommunications Capability, Notice of Proposed Rulemaking, CC Docket Nos. 01-338, 96-98, 98-147, FCC 01-361 (rel. Dec. 20, 2001) (“UNE Triennial Review”).*

of ILEC revenues, such as by permitting unlimited conversions of special access services to UNEs; doing so would only perpetuate and deepen the depression that is gripping the entire telecommunications sector and would virtually preclude any chance that the ILECs will rapidly deploy advanced technology into their networks.

With these points in mind, Corning sets forth below a proposed amendment to existing FCC regulations that is intended to promote the deployment of FTTH. Corning is certainly not opposed to broader relief from unbundling obligations, but it has structured this revision to focus on FTTH given the great, and so far almost entirely unrealized, promise of that technology (amendments in red):

§51.319 Specific unbundling requirements.

(a) *Local loop and subloop.* An incumbent LEC shall provide nondiscriminatory access, in accordance with §51.311 and Section 251(c)(3) of the Act, to the local loop and subloop, including inside wiring owned by the incumbent LEC, on an unbundled basis to any requesting telecommunications carrier for the provision of a telecommunications service, except that the incumbent LEC shall not be required to provide unbundled access to a fiber loop as defined below and, where a fiber loop is deployed to a particular customer, to an existing copper local loop serving that customer.

(1) *Local loop.* The local loop network element is defined as a transmission facility between a distribution frame (or its equivalent) in an incumbent LEC central office and the loop demarcation point at an end-user customer premises, including inside wire owned by the incumbent LEC. The local loop network element includes all features, functions, and capabilities of such transmission facility. Those features, functions, and capabilities include, but are not limited to attached electronics except those electronics for equipment used for the provision of advanced services, such as Digital Subscriber Line Access Multiplexers, and line conditioning. The local loop includes, but is not limited to, DS1, DS3, ~~fiber~~, and other high capacity loops.

(2) *Fiber loop.* The fiber loop is defined as a local loop which extends fiber from the customer side of the central office to the premise of a residential customer and the associated equipment attached thereto.

Note: With the addition of (a)(2) “Fiber loop”, “Subloop” must be renumbered to 51.319(a)(3) and “Network interface device” must be renumbered to 51.319(a)(4)

This proposal is both reasonable and legally sound. The proposal is reasonable because:

- CLECs have demonstrated that they can self-provide FTTH;
- the proposal is a very narrow exception, applying only to residential service, a market of little interest to most CLECs;
- CLECs can continue to use resale, a means that many CLECs use to gain access to residential customers;
- CLECs will continue to have unbundled access to existing copper facilities where FTTH is not deployed, which is about 95% of the households in 2005.

II. Legal Analysis

In *United States Telecommunications Association v. FCC*, the D.C. Circuit warned that unbundling “imposes costs of its own, spreading the disincentive to invest in innovation.”² Accordingly, the court cautioned that impairment should be found only when an element is “unsuitable for competitive supply.”³ In making this determination, the court instructed the Commission to focus on “cost differentials” as between new entrants and ILECs “that would make genuinely competitive provision of an element’s function wasteful.”⁴ And, the court made clear that the Commission must consider inter-modal competition in the course of its impairment

² *United States Telecommunications Association v. FCC*, 290 F.3d 415, 427 (D.C. Cir. 2002) (“USTA”).

³ *Id.*

⁴ *Id.*

analysis; the Commission may not define a service so narrowly that it can be provided only by use of an element in an ILEC's network.⁵

As discussed below, there is no basis for finding impairment for FTTH under the D.C. Circuit's approach. Notably, however, there is no basis for finding impairment even under the Commission's existing unbundling rules, which state, in section 51.317(b), that:

"The Commission shall undertake the following analysis to determine whether a non-proprietary network element should be made available for purposes of section 251(c)(3) of the Act:

*(1) Determine whether lack of access to a non-proprietary network element "impairs" a carrier's ability to provide the service it seeks to offer. A requesting carrier's ability to provide service is "impaired" if, taking into consideration the availability of alternative elements outside the incumbent LEC's network, **including self-provisioning by a requesting carrier**... lack of access to that element materially diminishes a requesting carrier's ability to provide the services it seeks to offer.⁶*

Three key facts demonstrate that competition will not be impaired without unbundled access to ILEC FTTH. First, FTTH will be used largely to provide broadband services in competition with the market-leading cable companies and a host of other potential competitors. The service-specific analysis mandated by the D.C. Circuit and Section 251(d)(2) precludes a finding of impairment where the marketplace already is competitive – particularly where the ILECs occupy a distant second-place position. Second, ILECs have hardly deployed any FTTH; the predominant suppliers are the CLECs, by several orders of magnitude. This demonstrates that CLEC self-supply is eminently feasible. Third, CLECs face no cognizable cost disadvantage vis-à-vis the ILECs. In fact, the CLECs' costs of deploying FTTH may be less

⁵ *Id.* at 428-429.

⁶ 47 C.F.R. § 531.317(b).

than the ILECs' given their lower labor cost. Finally, even if the Commission harbored any concern that competition might be impaired without access to ILEC FTTH, it should adopt the relief requested by Corning under its "at a minimum" authority. Data supplied by Corning demonstrate that unbundling markedly deters ILEC deployment of FTTH and other broadband technologies.

A. The Competitive Broadband Market Precludes A Finding of Impairment With Respect to FTTH

As a threshold matter – without even considering the detailed evidence of non-impairment presented below – the Commission is precluded from finding impairment with respect to FTTH because that technology will be used primarily for the provision of next-generation broadband services, and the broadband market is unquestionably competitive. Even before this proceeding was initiated, the Commission repeatedly found that the broadband market is vigorously competitive, and the D.C. Circuit strongly endorsed that judgment.⁷ Cable companies have a tremendous lead in the marketplace and already have made the bulk of the investments that will be needed for them to provide next-generation, true broadband services. All those companies need to do to offer higher capacity services is to upgrade electronics; their distribution networks are largely complete. The ILECs, in contrast, have not even begun to invest the hundreds of billions of dollars that will be needed to support true broadband (measured in tens of megabits per second rather than a few hundred kilobits per second). And a host of other technology platforms are waiting in the wings, including multiple wireless alternatives, Ka-band satellites, and possibly power line communications. The existence of this actual and

⁷ See *USTA* at 428.

potential competition, coupled with the ILECs' status as insurgents rather than incumbents, precludes a finding of impairment with respect to FTTH.

B. New Entrants Have Demonstrated that They Can Self-Supply FTTH.

Another reason that the lack of access to ILEC fiber-to-the-home facilities will not “impair” competition is that non-ILECs account for the vast majority of current FTTH-served developments, demonstrating beyond any reasonable dispute that FTTH is “susceptible to competitive supply.” FTTH, quite simply, has not yet been deployed by the ILECs. The ILECs have passed fewer than 1,000 homes with FTTH capability throughout the entire nation. In other words, they provide FTTH service to less than 0.001% of the homes that currently receive telephone service.

The CLECs, on the other hand, have passed nearly 45,000 homes with FTTH capability. As a result, they have clearly established the fact that they can “self-provide” fiber to the home. As indicated in Table I below, they account for 67% of the FTTH deployments to date, while the RBOCs account for only 0.6%.

Table I
Fiber to the Home Deployment by Carrier Class

	Homes Passed by FTTH	Percent of Total
CLECs	44,890	67.0%
Small ILECs	3,600	5.4%
RBOCs	400	0.6%
Munis	18,100	27.0%
	-----	-----
Total	66,690	100 %

Source: Corning Incorporated and “*Fiber to the Home and Optical Broadband 2002*”, Render, Vanderslice & Associates (presented at the Fiber-to-the-Home Conference, New Orleans, LA, October 15, 2002)

C. New Entrants Face No Cost Disadvantage in Self-Deploying FTTH

FTTH is a remarkably cost-effective technology, and beyond that, is available to ILECs and CLECs on comparable terms.

1. FTTH Is Cost-Effective

The cost of FTTH depends upon a number of factors, including, but not limited to, the take rate, distance of the customer’s premise from the central office, the household density, whether aerial cable or buried cable is deployed, and whether the deployment is a “new build” or an “overbuild”. As reflected in the attached Declaration from Mr. Darryl Ponder, CEO of Optical Solutions, the cost of FTTH today ranges between \$600 to \$900 per home passed, and from \$1,700 to \$2,200 per subscriber served. With increased volumes, the cost would fall within the range of \$500 to \$800 per home passed and the range of \$1,200 to \$1,700 per home served.

More importantly, FTTH is a cost-effective solution for the deployment of robust broadband capability to the home. As indicated in Figure 1 below, cost for FTTH is lower, when measured on the basis of homes passed, homes served, and first-installed costs, than that for a hybrid fiber coax (“HFC”) architecture, the closest competitor to FTTH. CLECs can cost

effectively deploy fiber to the home rather than other comparable technologies like hybrid fiber coax. As stated in the attached Declaration of Darryl Ponder:

“The economics of fiber to the home in providing converged services of voice, video, and data are equal to or better than those achieved with copper technologies such as DSL or HFC ...”(emphasis added)

When measured on the basis of capability, fiber to the home also proves out. As indicated in Figure 2 below, FTTH can provide 19 Mbps bi-directionally for the cost reflected in Figure 1, while hybrid fiber coax can provide only 9 mbps downstream and 567 kbps upstream. This means that FTTH downstream capability can be provided at a first installed cost of \$0.51 per bit, while a HFC system costs \$1.62 per bit. When measured in this fashion, FTTH is clearly more cost effective. Further evidence of the cost effectiveness of fiber to the home is seen in the Broadband Services report recently published by the Federal-State Joint Conference on Advanced Services. This report states that:

“Manufacturing techniques have continually reduced the cost of fiber, driving deployment steadily toward the edge of the network. New network extensions see the utilization of fiber optics as only an incremental cost increase in return for the most network available. Fiber-to-the-home is becoming more prevalent in new housing developments, something unimaginable several years ago.”⁸

2. CLECs Enjoy Cost Advantages in Deploying FTTH

For several reasons, CLECs will incur greater costs for the deployment of fiber to the home that are equal or less than those incurred by the ILECs. First, the equipment market for FTTH is extremely competitive with many vendors offering different technological solutions as indicated in Table II below.

⁸ *Broadband Service in the United States: An Analysis of Availability and Demand*, ex parte filing in *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, CC Docket No. 02-33, at 19 (filed Nov. 6, 2002).

Table II
Suppliers of Fiber-to-the-Home Equipment

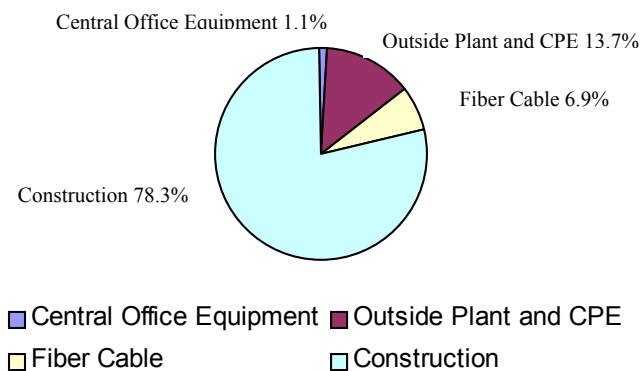
Company	Architecture
Optical Solutions	ATM-PON
Worldwide Packets	Ethernet-PTP
Wave7Optic	Ethernet-PON
Alcatel	ATM-PON
Marconi	HFC & ATM-PON
Alloptic	Ethernet-PON
Quantum Bridge	ATM-PON
Terawave	ATM-PON
Salira	Ethernet-PON
NEC eLuminant	ATM-PON

Source: Corning Incorporated

Secondly, CLECs may well be able to deploy FTTH less expensively than ILECs.

Construction accounts for well over 50% of the cost of deployment. In the case of the central office cited in Figure 3 below, the cost of construction is 78.3%.

Figure 3
Distribution of Capital Expenditures for Sample Central Office



<u>Sample CO</u>	
•	Location: Amarillo, TX
•	ILEC: SBC
•	Households within 12K Feet of CO: 27,191
•	Household Density: 111 per square mile
•	Plant Mix: 54% Underground / 46% Aerial

Source: *Assessing the Impact of Regulation on Deployment of FTTH*, Cambridge Strategic Management Group, Boston, MA, April 5, 2002, pp. 22.

Labor is the largest component of construction. CLECs may have a cost advantage over ILECs because they exclusively use non-union labor, while the ILECs use non-union contract labor and more expensive union members from the Communications Workers of America. The average hourly wages for union and non-union telecom workers, as indicated in Table III below, show non-union telecom workers earning 20% to 27% less than their union counterparts.

Table III
Hourly Wages of Telecom Blue-Collar Workers, 2001

	<u>Union</u>	<u>Non-Union</u>	<u>% Difference</u>
Craft	\$19.45	\$14.84	24%
Operatives	\$14.22	\$11.30	20%
Transportation	\$16.17	\$12.47	23%
Laborers	\$13.36	\$9.75	27%

Source: Economic Policy Institute

The CLECs have already demonstrated their ability to invest in fiber. In the case of fiber for transport, the CLECs dramatically increased their investment in fiber from 100,000 route miles in 1998 to 184,000 route miles in 2001.⁹ Finally, cost of FTTH is obviously not a problem for the CLECs as evidenced by the fact that, as indicated in Table I above, they account for 67% of the homes passed with fiber-to-the-home capability.

D. Because Unbundling Deters Deployment of FTTH, The Commission Can Grant Relief from Unbundling Under Its “At a Minimum” Authority

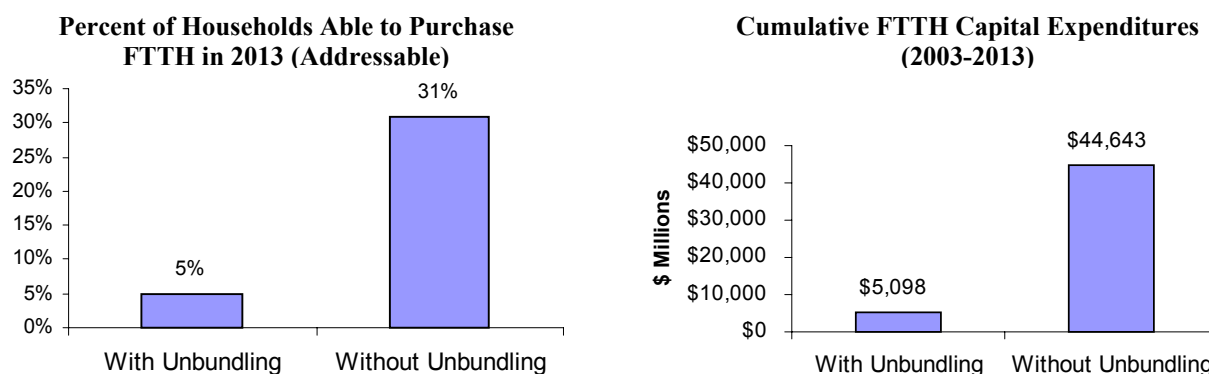
The foregoing discussion should establish beyond any reasonable dispute that competition is not impaired without unbundled access to ILEC FTTH. Even if the Commission

⁹ *UNE Fact Report 2002* at III-7, attached as exhibit to Comments of BellSouth, SBC, Qwest and Verizon, *Review of the Section 251 Unbundling Obligations of the Incumbent Local Exchange Carriers*, CC Docket No. 01-338, (filed Apr. 5, 2002).

had any residual doubt, however, it should decline to extend unbundling obligations to FTTH because of the devastating impact on investment. The record is replete with both anecdotal and theoretical evidence showing that unbundling obligations unquestionably deter investment, particularly in new technologies and services. In addition, Corning has submitted an analysis that quantifies the extent of the deterrent effect of unbundling with respect to FTTH deployment.¹⁰

In particular, as reflected in the *CSMG Analysis* and reflected in Figure 4 below, requiring the unbundling of fiber to the home will result a far lower level of deployment and less investment than would be achieved if the unbundling requirement were relieved.

Figure 4
Impact of Unbundling Relief on FTTH Deployment



Source: *Assessing the Impact of Regulation on Deployment of FTTH*, Cambridge Strategic Management Group, Boston, MA, April 5, 2002, pp. 11, 13.

¹⁰ Cambridge Strategic Management Group, *Assessing the Impact of Regulation on Deployment of Fiber to the Home: A Comparative Business Case Analysis* (“CSMG Analysis”) (Apr. 5, 2002), attached as exhibit I to Comments of Corning, Inc., *Review of the Section 251 Unbundling Obligations of the Incumbent Local Exchange Carriers*, CC Docket No. 01-338, (filed Apr. 5, 2002).

Figure 4 shows that, in the scenario where FTTH is unbundled, deployment passes only 5% of the homes by the year 2013. When FTTH is relieved from the unbundling requirement, deployment passes 31% of the homes by the year 2013. Thus, imposing an unbundling requirement on FTTH will result in a substantially lower level of deployment. It reduces the ability of the ILECs to deploy a technology that will uniquely allow them to compete against the cable television industry in the delivery of integrated voice, data, and video service. The result would be to slow the introduction of competition and depress overall investment in all next-generation broadband technologies. After all, without ILEC FTTH as a competitive force, neither cable companies nor other potential platforms will feel much pressure rapidly to expand their own next-generation offerings.

In conclusion, there is no legal or policy basis for extending legacy regulations to ILEC FTTH investment. By adopting the rule changes advocated by Corning, the Commission can eliminate a serious obstacle to the deployment of critically important next-generation broadband technology and greatly expedite the availability of innovative services to tens of millions of consumers.

Attachment 1

Declaration of Darryl Ponder

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of

Review of the Section 251 Unbundling
Obligations Of Incumbent Local
Exchange Carriers

CC Docket No. 01-338

Implementation of the Local
Competition Provisions of the
Telecommunications Act of 1996

CC Docket No. 96-98

Deployment of Wireline Services
Offering Advanced Services Capability

CC Docket No. 98-147

DECLARATION OF DARRYL PONDER

My name is Darryl Ponder. I am the Chairman and CEO of Optical Solutions. I oversee the operations of the entire company and, as such, I am intimately familiar with our entire product line, the economics of fiber in the local loop deployment, and the challenges facing carriers as they examine the possible deployment of fiber-based solutions for local access as compared to other broadband technologies. In addition, my educational background in electrical engineering and business make me uniquely qualified to attest to the technological and economic attributes of fiber-based local access solutions, particularly fiber to the home ("FTTH").

Optical Solutions is the leading provider of passive optical networking access systems that enable service providers to offer a wide range of integrated voice, video, and high-speed data services to residences, multi-tenant dwellings, and small- to medium-sized businesses. Our patented FiberPath® system is the system of choice by carriers throughout the United States and Canada. With over 13,500 units shipped and many thousands of units in service, Optical Solutions has proven that fiber to the home and fiber to the business is both technologically feasible and economically viable today.

There are three groups actively deploying passive optical networking access technology today: Independent Telephone companies, Municipalities and Housing Developers. Each of

these groups has found fiber to the home and business to be superior in economically providing converged voice, video and data services to their customers. While it is a common belief that fiber to the home is only cost effective in new build areas, it is the experience of Optical Solutions that fiber to the home is economically viable in many applications. For example, our fiber to the home installations are equally split between new housing builds, existing network refurbishments and competitive network overbuilds. We currently have several systems installed as overbuilds of such companies as SBC Corp. and Sprint.

With the introduction of FiberPath 400, Optical Solutions maintains its established leadership position by extending fiber access into the entire community – businesses, multi-tenant units, and single-family homes. With FiberPath 400, we continue to help facilities-based service providers, including independent telephone companies, competitive and incumbent local exchange carriers, utilities, municipalities, and housing developers meet subscriber needs now and well in the future. Fortunately, all these carrier classes are in the same position to compete because there are no legacy facilities that can be leveraged to gain an advantage. All new outside plant and electronics must be installed to deploy fiber to the home, multi-tenant dwellings, and small businesses.

FiberPath 400 meets the broadband needs of entire communities, and is a complete equipment, networking, and service solution. At its core is the FiberDrive™, located in the central office, where voice, data, and video signals are converted into optical light signals. These are transported through a passive optical network (“PON”) to the FiberPoint™ unit installed at the subscriber’s residence or office building. There the signals are converted into electrical signals to deliver plain old telephone service (“POTS”), analog and digital cable TV (“CATV”), and data for home computing and Ethernet networks.

As far as cost is concerned, fiber access systems have experienced a dramatic decrease in cost over the past few years. This is due to the substantial learning curve effects inherent in the production of passive and active components. The cost of a system is a function of many factors including, but not limited to, the take rate, the distance of the customer from the central office, household density, whether aerial or buried cable is deployed, and whether the deployment is a new build or overbuild. Generally speaking, today the cost of fiber to the home ranges from \$600 to \$900 per home passed and \$1700 to \$2200 per home served. It is expected that with increased volumes, such as would be expected as the technology is deployed by larger companies such as Sprint and the RBOCs, that the cost would fall in the range of \$500 to \$800 per home passed and \$1200 to \$1700 per home served. The economics of fiber to the home in providing converged services of voice, video and data are equal to or better than those achieved by copper technologies such as DSL or HFC with fiber enjoying the added benefits of better quality of service and much higher available bandwidths, added security and reduced network maintenance costs. Fiber is truly proving to be the access technology of choice for building networks today and for future-proofing networks for the bandwidth needs of tomorrow.

I declare under the penalty of perjury that the foregoing is true and accurate. Executed on November 18, 2002.

Respectfully submitted,



Darryl Ponder
Chairman and CEO
Optical Solutions
16305 36th Ave. North, Suite 300
Minneapolis, MN 55446-2698

November 18, 2002